

13.0 Recreation

13.1 Introduction

The following chapter considers whether the proposed project, ISDP, would increase the demand for recreational facilities, or affect existing recreational opportunities. The affected environment is described first, followed by a discussion of the environmental effects of ISDP, and the mitigation measures necessary to alleviate any identified significant adverse impacts. Finally, the chapter contains a comparative evaluation of the effects of the alternatives upon recreation.

13.2 Environmental Setting/Affected Environment

13.2.1 Introduction

Outdoor recreation enthusiasts have historically been drawn to locations such as lakes and rivers. Until recently, recreation occurred incidentally at natural water bodies; however, the importance placed on recreation activities by a rapidly growing population has necessitated the active development and management of recreational resources (DWR 1993e). Consequently, one of the purposes of the SWP is recreation (DWR 1993e). Recreation at SWP facilities includes camping, boating, fishing, swimming, bicycling, and other activities. Recreational components have been taken into consideration at SWP facilities from the upper Feather River reservoirs in Plumas County to Lake Perris in Riverside County.

Most of the recreation associated with Delta and SWP facilities is water-dependent, i.e. boating, fishing, rafting and swimming, or water-enhanced, such as camping, picnicking, hiking, bicycling, hunting and scenic and wildlife observation.

Due to the nature of watercourses and the varied requirements of water-dependent recreational activities, fluctuations in water levels associated with ISDP implementation have the potential to affect a variety of recreational resources. Consequently, recreational conditions in several parts of the state, from Lake Oroville in the north to Lake Perris in the south, are related to the changes anticipated with ISDP implementation in the Delta. This section documents characteristics of existing water-dependent and water-enhanced recreational resources in the project area and at related SWP facilities statewide.

13.2.2 Delta Region

The Delta is a unique natural resource attracting recreationists because of its aesthetic beauty, wildlife, unique waterway system and temperate climate (SLC 1991). The recreational resources of the Delta serve increasing populations of several areas: the Sacramento metropolitan area to the north, the San Francisco Bay area to the west, and the Stockton/Modesto/Tracy region to the east and south. The Delta's proximity to these major population centers maintains its growing popularity. Recreation in the Delta, mostly water-oriented, currently exceeds 12 million user

days annually and is expected to increase concurrent with the populations of surrounding counties (SLC 1991). A variety of recreation facilities are spread throughout the Delta, catering to several activities.

- *Recreation Facilities*

Waterways are an obvious recreational resource in an area with long, hot, and dry summers (San Joaquin County 1992c), and the Sacramento-San Joaquin Delta's approximately 50,000 acres of water surface and nearly 1,100 miles of leveed shoreline present many recreational opportunities, of which boating and fishing are the most popular (Ebasco 1988). Although located predominantly in the northern Delta, recreation facilities are distributed throughout the region and can generally be grouped into two categories: commercial and public. Existing commercial and public facilities are summarized below and shown in Figure 13-1.

Privately owned and operated commercial operations comprise the bulk of existing recreation facilities in the Delta (Ebasco 1988), but estimates of the number of facilities are highly variable. According to one study, approximately 150 commercial and public marinas operated in the Delta in 1978 (Ebasco 1988). In 1988, a total of 122 commercial recreation facilities served the Delta; 84 of those were marinas (Ebasco 1988). These commercial operations supplied approximately 8,000 berths, 2,100 dry storage spaces, 3,300 campsites, and 8,200 vehicle parking spaces (Ebasco 1988). In addition, 41 commercial establishments had picnic areas (Ebasco 1988). Equipment was available for rental at commercial facilities, as follows: 15 of the facilities rented houseboats, 18 rented fishing boats, five rented ski boats, six rented ski equipment and four rented fishing equipment (Ebasco 1988). In 1991, the California State Lands Commission identified approximately 100 marinas providing 12,700 berths throughout the Delta region, but noted that many were either private and not accessible to most boaters, or, if public, had small launching capacities (SLC 1991). Table 13-1 lists the existing commercial recreation facilities in the Delta, and indicates the components of each.

Fewer public recreation areas have been developed in the Delta. By 1988, there were only 19 public recreation sites, three of which were operated by the state (the Borrow Ponds, Brannan Island SRA, and Franks Tract SRA) (Ebasco 1988). There are currently 22 public recreation areas in the Delta, encompassing 5,450 acres of fishing access sites, parks, camping and boat launch areas in four of the six Delta counties (see Table 13-2) (DWR 1994g). Many of the fishing access areas are undeveloped, such as the area surrounding Clifton Court Forebay, while others include structures such as the fishing piers at Mossdale Park and Westgate Landing. Seven sites include picnic areas, and two (Brannan Island and Rio Vista Sandy Beach Park) have campgrounds (Ebasco 1988). Boating accommodations are available at 16 sites, and include 35 berths and 24 boat-in campsites at Brannan Island. Other recreational activities, such as boating and water skiing, are accommodated at several facilities, including Buckley Cove Park Marina, Dos Reis County Park, Mandeville Tip, South Spud Channel, I-5 Boat Ramp Park, and Franks Tract (Ebasco 1988).

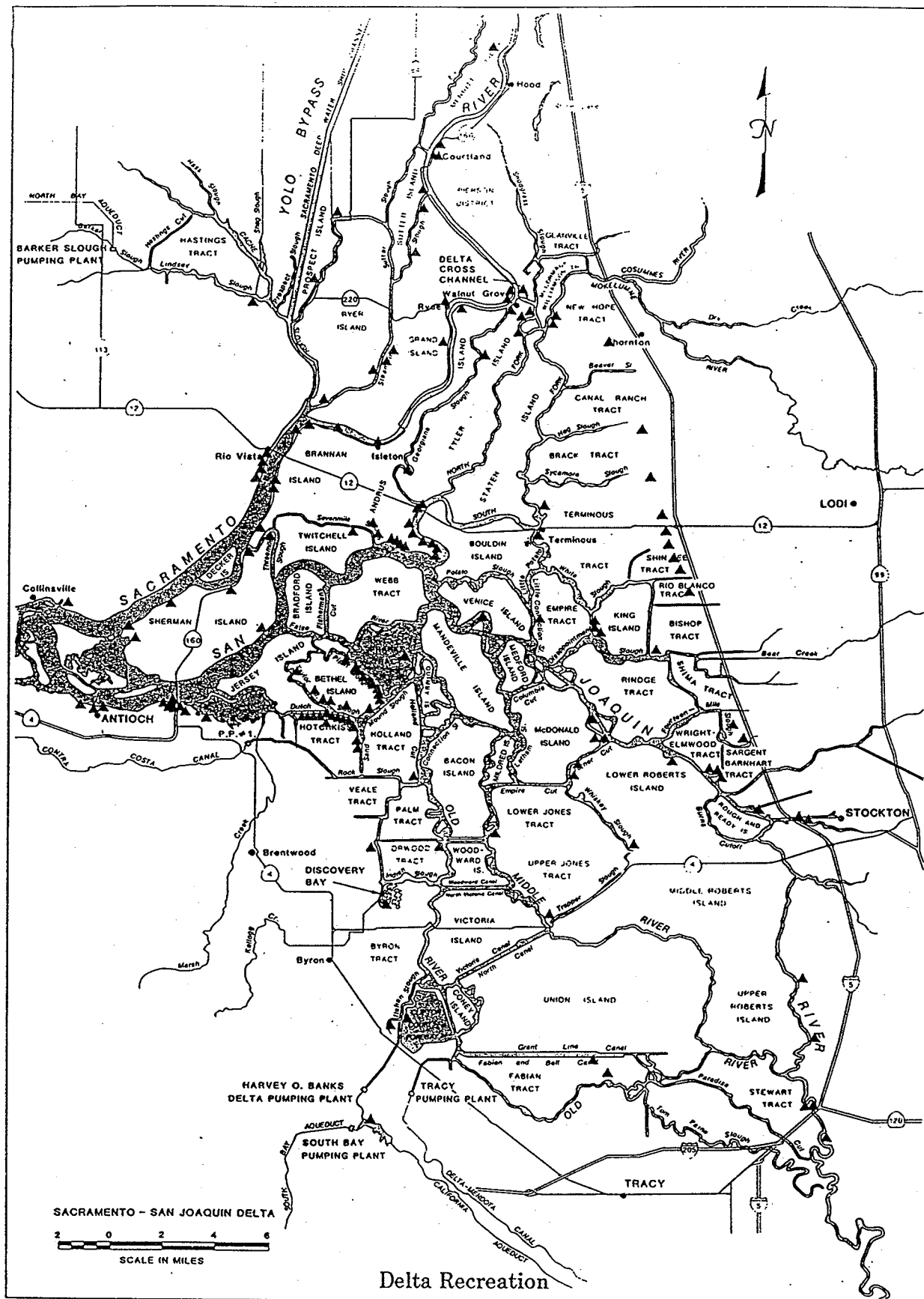


Figure 13-1. Delta Recreation Facilities.

Table 13-1
Commercial Recreation Facilities, Delta Region

Name	Boat Rental	Boat Launch	Camp Sites	Guest Docks	Marine Supplies	Fuel	Food	Picnic Sites	Fishing Piers	Parking Spaces
Arrowhead Harbor		X		X		X				
Anchor Marina	X	X	X	X	X	X		X		20
Ann & Chuck's Boat Harbor		X		X	X	X	X			
Antioch Marina				X	X	X				
B&W Resort Marina		X	23	X	X	X	X			4 acres
Bagley Boat Works		X			X					
Beacon Harbor			30			X		5		50
Bean Pot Resort				X			X	X		.5 acres
Bentley's Marina			9	X	X	X	X			
Bethel Harbor		X	20	X	X	X	X	2		50
Big Break Marina		X	X	X	X	X	X			32 acres
Boathouse in Locke	X	X		X		X	X			150
Boathouse Marina					X		X			
Bob's Marina						X				50
Boon Dox				X	X		X			
Boyd's Harbor			10	X			X	2		50
Bruno's Island				X			X	4		9 acres
Bullfrog Landing & Marina	X				X	X	X			
Carol's Harbor	X	X		X	X	X	X	4		75
Catfish Cafe				X			X			
Changing Tides Resorts			10	X	X		X	1		5
Clarksburg Marina		X								
Cliff's Marina				X	X	X	X			235
Collinsville Fishing Resort	X	X	30	X	X	X	X			unpaved
Courtland Docks	X	X		X		X	X			32
Cruiser Haven				X	X	X	X			3 acres
Deckhands Supply	X			X	X					
Del's Boat Harbor	X	X		X	X	X	X	10	1	110
Delta Bay Club	X		145	X	X		X			

Table 13-1 (cont.)
Commercial Recreation Facilities, Delta Region

Name	Boat Rental	Boat Launch	Camp Sites	Guest Docks	Marine Supplies	Fuel	Food	Picnic Sites	Fishing Piers	Parking Spaces
Delta Country Houseboats	X	X				X				
Delta Marina Yacht Harbor		X	25	X	X	X	X	2		275
Delta Resort	X	X	76	X	X		X	20		75
Discovery Bay Yacht Harbor		X		X	X	X	X			250
Dock Mirza Marina		X		X						
Doc's Marina			12			X	X	2		unpaved
Driftwood Marina				X		X				150
Duck Island RV Park			51							
Eddo's Boat Harbor	X	X	50	X	X	X	X	15		100
Embarcadero Yachts				X						
Farrar Park Harbor		X			X					unpaved
Four Seasons Marina				X	X	X	X			
Frank's Marina		X	20	X		X	X	12		100
Freeport Landing			28	X	X	X	X			
Freeport Marina			3	X	X	X	X			
Giusti's				X		X	X			60
Golden Gate Island Resort			40	X			X	12		
Grand Island Inn				X			X			
Greg's Hotel and Harbor			3 + cabins	X				5		
Hap's Bait				X	X					
Happy Harbor			6	X			X			50
Harris Marina			23							30
Haven Acres		X		X	X	X	X	2		5
Heinbockle Harbor				X		X				20
Hennis Marina		X	5	X	X			3		80
Herman & Helen's Marina	X	X		X	X	X	X	2		50
Hidden Harbor			25	X	X	X	X			75
Holland Riverside Marina		X		X	X	X	X			X

Table 13-1 (cont.)
Commercial Recreation Facilities, Delta Region

Name	Boat Rental	Boat Launch	Camp Sites	Guest Docks	Marine Supplies	Fuel	Food	Picnic Sites	Fishing Piers	Parking Spaces
Holiday Flotels	X				X	X	X			X
Holiday Inn				X			X			
Honker Cut Marine		X		X	X					10
The Ice Chest				X	X	X	X			
The Island				X						
Island Holiday	X									
Islands Marina		X	50	X	X	X	X			
Isleton Boat Ramp		X		X	X		X			
King Island Resort	X	X		X	X	X	X	12		80
Ko-Ket Resort		X	40	X	X	X	X	16		20
Korth's Pirates Lair	X	X	48	X	X	X	X			200
Ladd's Stockton Marina					X		X			100
Lakeview Harbor			20							20
Lauritzen Yacht Harbor	X	X		X		X		2		50
Lazy M Marina		X	12	X	X	X	X	X		50
Lee's & Ginny's		X		X	X	X	X			
Leisure Landing Marina				X	X	X	X			150
Lighthouse Restaurant		X	157	X	X	X	X	X		150
Lloyd's Holiday Harbor					X	X	X			100
Lost Isle			75	X			X	X		
Marine Emporium		X		X	X		X			35
Martin's Sherman Lake Marina	X	X	20	X	X	X	X			50
Mazikeen's Landing			2	X						
Mossdale Marina			3	X	X	X	X	2		12+2 acres
Mossdale Trailer Park		X	11	X				5		5
Mozzetti Marine		X								6
New Bridge Marina				X	X	X	X	5		100
New Hope Landing	X	X	25	X	X	X	X			20

Table 13-1 (cont.)
Commercial Recreation Facilities, Delta Region

Name	Boat Rental	Boat Launch	Camp Sites	Guest Docks	Marine Supplies	Fuel	Food	Picnic Sites	Fishing Piers	Parking Spaces
Oakwood Lake			357	X				200	1	200
Orwood Resort	X	X	500	X	X	X	X		X	300
Outrigger Marina			25	X	X	X	X			50
Owl Harbor	X			X						20 acres
Ox Bow Marina		X		X	X	X	X			525
Paradise Point Marina	X	X		X	X	X	X			320
Perry's Boat Harbor		X		X	X	X	X			500-600
Rainbow Resort	X		48	X	X	X	X			
Rancho Marina		X	90	X	X		X	25		
Richard's Yacht Center	X					X	X			25
River Bank Marina				X			X			
River Galley				X			X			
Rivers Harbor										12
Riverview Lodge				X			X			100
River View Resort			2	X						
Russo's Marina		X	20	X	X	X		30		50
S&H Boat Yard	X									15
Sacramento Marina		X		X		X	X			
Sacramento Waterfront Dock				X						
Sam's Harbor			6	X	X	X	X	3		20
San Andreas Landing RV Park			X							
San Joaquin Yacht Harbor						X		20		200
Sandy Beach Regional Park		X	42							
Sea Horse Marina				X						8
Sherwood Harbor			39	X	X	X	X			
Sid's Holiday Harbor				X			X	X		50
Snug Harbor		X	60	X	X	X	X	8		100
Spindrifft Marina			47	X	X	X	X			120
The Spot			18	X	X		X	6		30
Steamboat Landing				X		X	X			

Table 13-1 (cont.)
Commercial Recreation Facilities, Delta Region

Name	Boat Rental	Boat Launch	Camp Sites	Guest Docks	Marine Supplies	Fuel	Food	Picnic Sites	Fishing Piers	Parking Spaces
Stephens Anchorage		X		X	X	X	X	3		600
Sugar Barge Marina			150	X				X		
Tiki Lagoon Resort		X	65	X	X	X	X	50		
Tower Park Marina	X	X	396	X	X	X	X	6		500
Tracy Oasis Marina	X	X	25	X	X	X	X	5		150
Tunnel Trailer Park			15	X						
Turner Cut Resort	X	X	75	X	X	X	X			106
Uncle Bobbie's		X								100
Union Point Resort				X		X	X			15
Vieira's Resort		X	47	X	X	X	X	X		24
Viking Harbor				X			X			8
Village West Marina				X	X	X	X			300
Walnut Grove Marina	X	X		X	X	X	X			180
Waterfront Yacht Harbor	X	X		X		X	X			
Whiskey Slough Harbor	X	X	30	X	X	X	X	4		100
Willow Berm Boat Harbor						X		10		200
Wimpy's Marina		X	12	X	X	X	X	4		
Windmill Cove		X	217	X	X	X	X	20		60
Woods Yacht Harbor						X				100

Sources: Schell, Hal. *Hal Schell's Delta Map and Guide: The San Joaquin and Sacramento Rivers*. Schell Books, Stockton, CA.

Ebasco Services, Inc. *Recreation Facilities Plan for North and South Delta*. March, 1988.

Table 13-2
Public Recreation Facilities, Delta Region

Name	Boat Rental	Boat Launch	Camp Sites	Guest Docks	Marine Supplies	Fuel	Food	Picnic Sites	Fishing Piers	Parking Spaces
Antioch Fishing Pier									X	X
Antioch Pier Park									X	X
Borrow Ponds										
Brannon Island State Recreation Area		X	102	X				200		576
Buckley Cove Park Marina		X				X	X	5		182
Channel I-5 Boat Ramp Park		X						3		62
Clarksburg Fishing Access		X		X						X
Dos Reis County Park		X	26					13		43
Franks Tract State Recreation Area										
Fritz Grupe Park								10		20
Georgiana Slough Fishing Access		X								X
Hogback Island Fishing Access		X		X				13		55
Louis Park		X			X		X	31	X	618
Lower Sherman Island Fishing Access		X						X		42
Mandeville Tip Park				X				12		
Morelli Park		X								
Mossdale Crossing Park		X						5	X	
Oak Grove County Park				X				4		
Rio Vista Public Launch Ramp		X								X
Rio Vista Riverbank /Pier								3	X	25
Rio Vista Sandy Beach Park		X	42					7		100
South Spud Island Park								X		
Westgate Landing			7	X						

Sources: Schell, Hal. *Hal Schell's Delta Map and Guide: The San Joaquin and Sacramento Rivers*. Schell Books, Stockton, CA.

Ebasco Services, Inc. *Recreation Facilities Plan for North and South Delta*. March, 1988.

- *Recreation Activities*

Delta recreationists enjoy an assortment of water-dependent and water-enhanced activities, such as water skiing, fishing, boating, sightseeing, camping and picnicking. Families often spend the day or the weekend on the levees, engaged in a number of diversions such as picnicking, swimming, and fishing and extended, multiple-activity outings on the water are also popular (San Joaquin County 1992c). Boating is the single most popular pastime in the Delta region, accounting for approximately 17 percent of all visits, followed by fishing (15 percent), relaxing (12 percent), sightseeing (11 percent), and camping (8 percent) (Jones Stokes Associates 1994).

The Sacramento-San Joaquin Delta provides exceptional boating opportunities (DWR 1993), including houseboating, sailing, water skiing, wind surfing, fishing and other pleasure boating. Boating has enjoyed increased popularity in recent years: between 1976 and 1980 the number of boats kept in San Joaquin County grew by more than 30 percent (from 17,000 in 1976-77 to 22,820 in October, 1980), and the number of boats registered to San Joaquin County residents is rising faster than the population, increasing 32 percent between 1980 and 1987 (San Joaquin County 1992c). Commercial excursions on the waterways are rare and mainly limited to the Stockton Deepwater Channel; however, individuals and groups often rent small fishing boats and houseboats (San Joaquin County 1992c).

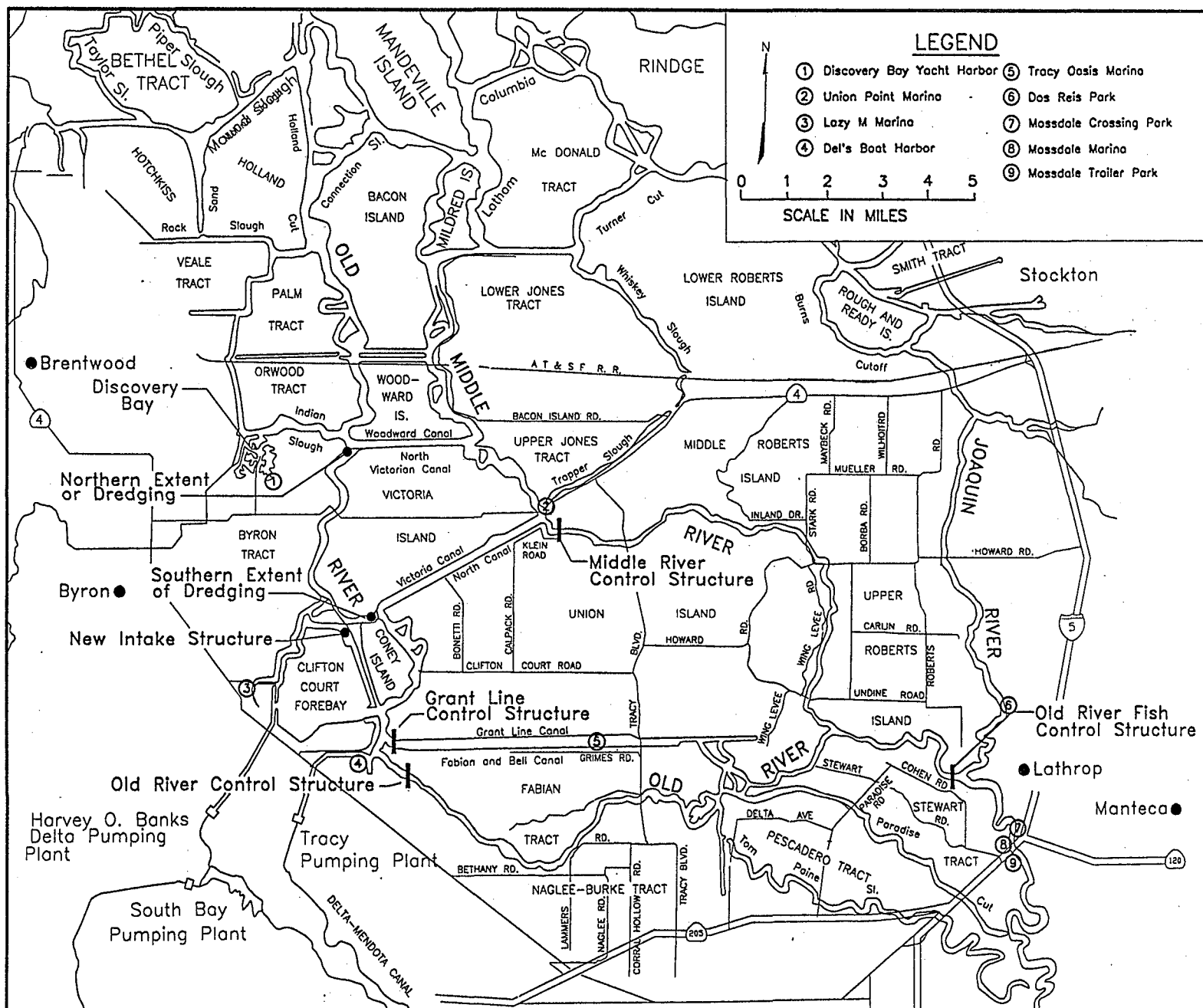
Sport fishing in the Delta region is a year-round activity, involving the use of private vessels and commercial passenger-carrying fishing vessels, as well as fishing along the shore. Important sport fish in the Delta region include striped bass, white sturgeon, chinook salmon, and American shad (DWR 1993e; Jones and Stokes 1994).

Passive recreation accounts for approximately one-third of all recreational activity in the region and includes relaxing, sightseeing, camping, nature study and picnicking. (San Joaquin County 1992c) A 1980 San Joaquin County survey found nature study in the Delta is more popular than golf and boating among county residents (San Joaquin County 1992c).

- *Project Area*

About 20 recreation facilities, including several large marinas, are located in the south Delta (see Figure 13-1). The south Delta channels are heavily used for boating, fishing, and other water activities, accommodating an estimated 25 percent of Delta recreation. DWR has conducted boat surveys at the proposed barrier locations to determine the level of usage and types of recreational boating at each site. The surveys were conducted over four years from 1991 to 1995 (excluding 1994). Boats were counted along the waterways on several different dates, including weekdays, weekends and holidays from May to September. The Boat Survey Report (DWR 1996b) can be found in Appendix 5. Recreation areas in close proximity to each of the proposed ISDP improvement project sites are shown in Figure 13-2 and described below, along with the boat survey results for each barrier sites.

13-11



Clifton Court Forebay Northern Intake Site. A diverse group of public and private recreational uses are situated near the Clifton Court Forebay northern intake site. Nearby facilities include the Lazy M Marina, approximately two river miles from the proposed intake. The Lazy M is located west of Clifton Court Forebay at the southwest end of Italian Slough near Brush Creek. Amenities at the Lazy M Marina include: boat launching; 12 full service camping and RV sites; a small craft guest dock with overnight moorage and restrooms; gas, oil, ice, groceries, bait and tackle; and a snack bar and beer bar. In addition to the Lazy M Marina, the levees surrounding Clifton Court Forebay provide public opportunities for fishing and waterfowl hunting (DWR 1993b). Boating and water contact are prohibited within the forebay itself for safety reasons.

Old River Dredging Site. While few developed recreation facilities are located near the Old River dredging site or the proposed settling ponds, the river itself constitutes a popular location for activities such as boating, fishing and water skiing. In addition, State Route 4, a locally-designated scenic highway, crosses Old River and Victoria Island, affording sightseers an unobstructed view of the dredging site and the nearby settling ponds. The closest developed recreation facility to the dredging site and settling ponds is the Lazy M Marina, west of Clifton Court Forebay at the southwest end of Italian Slough near Brush Creek. The Lazy M Marina is approximately three river miles from the southern end of the dredging site. Boats exiting the marina must pass through the proposed dredging area to access Delta waterways. Facilities and services available at the Lazy M Marina are described above.

Old River Fish Control Structure Site. Several recreation facilities operate near the proposed Old River fish control structure site, including Dos Reis Park, Mossdale Crossing Park, Mossdale Marina, and Mossdale Trailer Park. Dos Reis Park lies adjacent to the San Joaquin River, approximately two miles northeast of the proposed barrier site. Boat launching and 26 full service camping sites are available at Dos Reis Park. Mossdale Crossing Park consists of a picnic area, playground, and boat launching ramp roughly two miles southeast of the barrier site on the east bank of the San Joaquin River. Mossdale Marina is a full service marina about 2.25 miles southeast of the proposed barrier on the west bank of the San Joaquin River. Mossdale Marina provides three camping/RV sites with restrooms and showers; a small craft guest dock; gas and oil; ice, bait, tackle, and groceries; and a laundromat, snack bar, and beer bar. Mossdale Trailer Park is located approximately 2.5 miles southeast of the proposed fish control structure on the west bank of the San Joaquin River. Amenities at Mossdale Trailer Park include boat launching facilities; a laundromat; 11 camping and RV sites with restrooms and showers; and a small craft guest dock with restrooms and showers.

Boating along Old River at the juncture with San Joaquin River is heaviest on weekends and holidays, averaging 60 to 75 boats a day respectively. Traffic is much heavier in this same area traveling along the San Joaquin River. Weekends and holidays average over 150 boats per day. Ski boats and jet skis represent large majority of boats using the area, with only a few cruisers and fishing boats.

Middle River Tide Barrier Site. Union Point Marina is the only developed recreation facility near the proposed Middle River barrier site. Located one-half mile north of the proposed barrier on Middle River at SR 4, Union Point Marina primarily serves small boats, since shallow water and snags exist in adjacent waters. Services available at Union Point include a large and small

craft guest dock with available overnight moorage; gas and oil; and a snack bar, restaurant, and cocktail lounge. An existing temporary rock barrier within the river is a popular spot for anglers.

Boating along this waterway is light with an average of 15 to 20 boats a day on weekends and holidays. The type of boats found in this area is fairly evenly distributed with ski boats the most popular.

Grant Line Canal Barrier Site. The West Grant Line Canal barrier lies in a popular boating area. Developed recreation facilities near the proposed barrier site include Del's Boat Harbor and Tracy Oasis Marina. Del's Boat Harbor is located approximately one mile south of the barrier site on Old River and provides the following services: boat launching, boat rentals, guest docks, fuel; marine supplies; food; restrooms; ten picnic tables, a fishing pier; and 110 parking spaces. Tracy Oasis Marina lies roughly four miles east of the proposed barrier site, on the south bank of Fabian and Bell Canal. Tracy Oasis Marina provides the following services: boat launching; fishing boat rentals; a 25-site camping and RV complex; a guest dock accommodating both large and small craft; restrooms and showers; gas, oil, propane, ice, marine supplies, bait, and tackle; and a laundromat, grocery store, snack bar, restaurant and bar.

Boating along both the West and East Grant Line Canal is very heavy. West Grant Line averages 250 to 270 boats per day on weekends and holidays, while East Grant Line averages 170 and 100 boats per day respectively. Once again, ski boats and jet skis are the main component of boat traffic in this area.

Old River Flow Control Structure Site. Due to its proximity, the Old River flow control structure site is surrounded by the same recreation facilities as the Grant Line Canal barrier site. Del's Boat Harbor is located approximately one-quarter mile west of the proposed Old River barrier near Grant Line Canal. The Tracy Oasis Marina lies about five river miles northeast of the site on Fabian and Bell Canal. Features of both Del's Boat Harbor and the Tracy Oasis Marina are described above relative to the proposed Grant Line Canal barrier site.

Boat traffic along Old River in this location is relatively light, averaging only 30 and 75 boats per day on weekends and holidays. While ski boats and jet skis are most popular, this area receives more fishing boats than the other areas surveyed.

- *Projected Needs And Proposed Facilities*

Overall recreation in the Delta region has increased substantially over the last several decades. In 1963, recreational use of the Delta was estimated at approximately 2.4 million recreation days and by 1978, demand for recreation facilities in the Delta had surpassed the available supply (Jones and Stokes Associates 1994). Recreational use of the Delta region has continued to increase, and by 1987, annual use had grown to an estimated 12 million recreation days (Jones and Stokes Associates 1994). Much of this increase can be attributed to the region's population growth. State, local and privately managed recreation areas have witnessed a relatively steady increase in attendance that has intensified in recent years, and the California Department of Parks and Recreation (DPR) predicts that Delta recreational activity will increase throughout the 1990s (SLC 1991). Park facilities are usually filled to capacity, and visitors are regularly turned away

from such popular spots as Brannan Island during periods of peak use (DWR and USBR 1990a; SLC 1991).

Though many regions in the Delta are identified as recreation areas, most of them lack sufficient facilities and are not publicly accessible (SLC 1991). Of the 56 potential recreation sites identified in DWR's 1981 *Delta Outdoor Recreation Implementation Plan*, few have been, or are programmed to be, developed in the near future (DWR and USBR 1990a). Currently, proposed improvements within the Delta include: (1) a 93-acre open space site at Big Break; (2) expansion of existing, and creation of new, bicycle and pedestrian trails in the outskirts of the Delta area; (3) conversion of Sherman Island to a wildlife/wetland management area, increasing habitat areas and providing both land and water access for recreation users; (4) construction of a picnic/staging area for wind surfers at Brannan Island's Windy Cove; (5) installation of more campsites and additional boat berths at Westgate Landing; (6) construction of a boat launch facility at Tower Park Marina; and, a (7) development of additional regional parks at Tom Paine Slough and Black Slough Landing (DWR and USBR 1990a; SLC 1991; San Joaquin County 1992). Two public areas operated by San Joaquin County, South Spud Island and Mandeville Tip, have been abandoned because of legal problems and maintenance costs (San Joaquin County 1992c).

Access to the Delta levees is limited, and legal public access is even rarer. Most people pull their cars off the road and fish within a few feet of their vehicles, often unknowingly on private property (San Joaquin County 1992c). Indeed, a 1977 survey showed that 77 miles (13.3 percent) of the 570 miles of levee banks in San Joaquin County were considered accessible for fishing; however, only 7.8 miles (1.4 percent) of the levees used for fishing were publicly controlled and/or owned (San Joaquin County 1992c).

13.2.3 State Water Project Facilities And Service Areas

One of the purposes of the SWP is provision of recreational resources in conjunction with its improvement projects. Reservoir management and operation directly affects water levels, which in turn influences the quality of recreational activities (DWR 1993e). Consequently, implementation of the ISDP could influence recreational activities at the SWP facilities described below.

- *Lake Oroville*

Lake Oroville is located in Butte County, five miles east of the city of Oroville in the foothills of the Sierra Nevada. Lake Oroville State Recreation Area (SRA), which includes Lake Oroville and Thermalito Forebay and Afterbay, is operated by the DPR. When full, Lake Oroville has a surface area of over 15,500 acres and 167 miles of shoreline (DPR 1988). The Lake Oroville SRA drew roughly 600,000 visitors during 1992 (Jones and Stokes Associates 1994). The SRA offers facilities for camping, picnicking, horseback riding, hiking, boating, water skiing, fishing, swimming, and boat-in camping. Limited waterfowl hunting is allowed on Thermalito Afterbay (DWR 1993).

Amenities and activities vary between the lake and forebay. Most of Lake Oroville SRA's formal recreation areas are located at Lake Oroville itself, and accommodate boating, water skiing, sailing, fishing, swimming, boat-in camping, and overnight camping. Unrestricted shoreline access is allowed for boat-in day use activities. In addition to numerous standard campsites, several boat-in campsites and four "floating campsites" are situated around the lake (DPR 1988). Two full-service marinas and one five-lane, one thirteen-lane, and two seven-lane boat launching ramps also serve Lake Oroville (DPR 1988). Car-top boat launching is also allowed, except on the Middle Fork Feather River (DPR 1988). The 600-acre Thermalito Forebay is divided into two facilities, Thermalito Forebay North and Thermalito Forebay South. The 300-acre Thermalito Forebay North is a day use area reserved exclusively for sailboats, canoes, and other non-motorized craft. The area is served by a lawn picnic area, 200-yard-long swimming beach, and two-lane boat ramp. Recreation facilities at Thermalito Forebay South consist of parking and a four-lane boat ramp (DPR 1988). Fishing and motor boating are the main recreation activities at Thermalito Forebay South (DPR 1988).

- *Oroville To Sacramento-San Joaquin Delta*

Feather River. The lower Feather River flows approximately 40 miles from Oroville Dam to the confluence with the Sacramento River. Most of the river flows through private lands; however, major recreation areas along the river include Yuba City Recreation Area and Riverfront Park in Marysville. These and other public and commercial facilities support a variety of water-dependent and water-enhanced activities. Recreation areas and activities associated with the lower Feather River are summarized below.

Facilities along the lower Feather River provide a variety of recreational amenities, including boat launching ramps, marinas, fishing areas, campgrounds, picnic areas, and athletic fields. Boat access between Oroville and Marysville is provided at Marysville Riverfront Park, the Yuba-Sutter Boat Dock, and near the communities of Live Oak, Gridley, and Biggs. Undeveloped access points downstream of Marysville are located along the Garden Highway, which generally borders the river to Verona (Jones and Stokes Associates 1994). Other facilities without boat launching ramps but which offer water-dependent and water-enhanced activities along the lower Feather River include Shanghai Bend County Park in Sutter County and the Yuba City Recreation Area.

Several forms of recreation are popular on the lower Feather River. Water-dependent recreation on the river consists primarily of boat and shore fishing, pleasure boating, and swimming. Fishing is probably the most popular activity on the river (Jones and Stokes Associates 1994). Water-enhanced recreation activities include sightseeing, picnicking, and camping (Jones and Stokes Associates 1994).

Sacramento River. The lower reach of the Sacramento River, between the confluence with the Feather River and the Delta (Courtland), is an 80-mile segment passing through four counties: Yolo, Sutter, Sacramento, and Solano. The degree to which river-oriented recreation facilities have been developed in each of these counties varies substantially.

Several recreation facilities are located along the lower Sacramento River in Yolo County, including public boat launching ramps in West Sacramento and Clarksburg, and approximately 12 commercial marinas. Sutter County maintains and supports no public boat launch facilities on the lower Sacramento River; however, a variety of private facilities, most of which include campgrounds, and picnic areas plus launching ramps and/or river docks, are located along the river in Sutter County. Sacramento County features more recreation facilities along the river than all other counties bordering the lower Sacramento River. Over 20 marinas are located along the river adjacent to the Sacramento metropolitan area, (City of Sacramento 1988). Public recreation facilities along the Sacramento River north of Courtland include Discovery Park, Captain Tiscornia Park, Miller Park, the Sacramento River Parkway, Seymour Park, and Garcia Bend Park. Several of these facilities offer boat launching ramps, including Discovery, Captain Tiscornia, Miller, and Garcia Bend parks. In addition over a dozen commercial marinas and river-oriented recreation facilities are located along the river within rural Sacramento County. Solano County boasts one public facility on the Sacramento River, Sandy Beach Park, located south of the city of Rio Vista. Amenities at Sandy Beach Park accommodate boating, fishing, swimming and sunbathing (Solano County 1991).

Recreationists participate in a variety of activities on the lower Sacramento River, including boating, fishing, water skiing, jet skiing, picnicking and swimming. The most prevalent water-dependent recreation along the lower Sacramento River consists of fishing and boating, while relaxing and picnicking comprise the most popular water-enhanced activities (Jones and Stokes Associates 1994).

- *California Aqueduct*

The SWP's California Aqueduct extends approximately 444 miles from the Delta to Lake Perris. The aqueduct provides limited recreation opportunities consisting primarily of fishing and some bicycling. DWR's focus in developing recreation along the California Aqueduct includes fishing, bicycling, and aqueduct safety.

Fishing is permitted along most reaches of the California Aqueduct, beginning at Bethany Reservoir and extending to just north of Silverwood Lake (DWR 1993e). In addition, 17 developed fishing access sites have parking, shade structures, and toilet facilities. Most fishing activity occurs along the access roads that parallel the canal, away from designated fishing sites. No water-dependent uses other than fishing are allowed along the canal (Jones and Stokes Associates 1994).

Two sections of bikeway, one in the San Joaquin Valley and the other in southern California, comprise the California Aqueduct Bikeway (DWR 1993e). The bikeway follows the paved service roads along the canal. The San Joaquin Valley section extends 67 miles down the west side of the valley, from Bethany Reservoir to San Luis Reservoir SRA, and is a designated National Recreation Trail (DWR 1993e). The southern California section extends 107 miles through the Antelope Valley, from Quail Lake to a point two miles north of Silverwood Lake in the San Bernardino National Forest, and is available to bicycle riders, hikers, and anglers. Rest stops with toilets, picnic tables, drinking water, and shade structures are placed along the bikeway about every 10 miles (DWR 1993e).

The U.S. Forest Service proposes routing part of the Pacific Crest National Scenic Trail along the aqueduct (DWR 1993e). The hiking and equestrian route would intersect the aqueduct, move east for one mile along the East Branch right-of-way to the Los Angeles Aqueduct, then north along that aqueduct, eventually connecting with the Sequoia National Forest segment of the trail (DWR 1993e). Along the East Branch, the trail would be routed as far from the water as possible while remaining within the right-of-way (DWR 1993e).

DWR has an active aqueduct safety program. Water contact with the California Aqueduct is not allowed, as it is almost impossible to climb out of the aqueduct without help. Safety brochures are published in several languages, and DWR personnel visit communities near the aqueduct and conduct safety seminars for schools and community groups (DWR 1993e).

- *San Luis Reservoir And O'Neill Forebay*

San Luis Reservoir and O'Neill Forebay lie in the foothills of Merced County, on the west side of the San Joaquin Valley, about 12 miles west of the city of Los Banos. The reservoir and forebay comprise the San Luis Reservoir SRA, operated by DPR. Extensive recreational developments and three wildlife areas around the SRA offer camping, picnicking, sail and power boating, water skiing, wind surfing, fishing, swimming, hiking, bicycling and waterfowl hunting (DWR 1993e and Jones and Stokes Associates 1994).

San Luis Reservoir. The reservoir, which has approximately 12,700 surface acres when full, is part of the San Luis Joint Use Facilities serving SWP and the federal Central Valley Project. Annual use at San Luis Reservoir reached a maximum of 359,000 visits in 1986 (Jones and Stokes Associates 1994). Recreation facilities at San Luis Reservoir accommodate boating, water skiing, fishing, picnicking, camping, hunting, and trail use activities. San Luis Reservoir has no designated swimming or lakeside beach areas. Boat access is provided in the southeastern portion of the reservoir at the Basalt Area, via a two-lane boat ramp and boarding dock, and at the northwestern Dinosaur Point area, with a four-lane boat ramp and boarding dock (Jones and Stokes Associates 1994). Water skiing is allowed in designated areas around the 65-mile reservoir shoreline. The area is subject to strong winds, which can create hazardous boating conditions on the reservoir (Jones and Stokes Associates 1994). Warning lights at the DWR-operated Romero Overlook visitor center and DPR's Quien Sabe Point facility alert boaters to hazardous wind conditions on the reservoir (Jones and Stokes Associates 1994).

O'Neill Forebay. Amenities at the 2,670-acre O'Neill Forebay supplement those provided at San Luis Reservoir. Approximately 335,000 people visited O'Neill Forebay in 1991 (Jones and Stokes Associates 1994). Facilities at O'Neill Forebay accommodate boating, fishing, swimming and wading, camping, and sightseeing activities. Specifically, the Medeiros recreation area provides picnicking, camping, and boat ramp access, and the San Luis Creek day-use area offers picnicking, swimming, and boat ramp access. Swimming, wading, and relaxing are the most popular activities at the forebay (Jones and Stokes Associates 1994).

- *Southern California Reservoirs*

SWP reservoirs in southern California include Castaic Lake, Pyramid Lake, Silverwood Lake, and Lake Perris, all found near the end of the east and west branches of the California Aqueduct. Recreational resources and activities associated with each of these reservoirs are described below.

Castaic Lake. Castaic Lake is located in northwestern Los Angeles County, immediately north of the community of Castaic. Castaic Lake SRA encompasses over 8,700 acres and includes approximately 29 miles of shoreline. Castaic Lake attracted over one million visitors in 1991 (Jones and Stokes Associates 1994). Recreation facilities operated by the Los Angeles County Department of Parks and Recreation at Castaic Lake consist of two boat ramps in the main reservoir and a boat ramp, swimming beach, and picnic area on the adjacent Castaic Lagoon. Campgrounds are available, and equestrian and hiking trails surround the lake. One arm of the lake is designated for water skiing; the other is reserved for fishing. Activities include fishing, boating, water skiing, swimming, hiking, horseback riding, camping and picnicking.

Pyramid Lake. Pyramid Lake, situated immediately east of the Los Angeles-Ventura County line in northwestern Los Angeles County, is within the Angeles National Forest. Nearly 400,000 visitors utilized Pyramid Lake in 1991 (Jones and Stokes Associates 1994). Amenities operated by the U.S. Forest Service at Pyramid Lake consist of a boat ramp, swimming beach, and picnic area at Emigrant Landing, six boat-in recreation areas, and campgrounds at Los Alamos. Only the Emigrant Landing and Serrano recreation areas are accessible by car. Activities consist of boating, water-skiing, fishing, swimming, picnicking, hiking and camping.

Silverwood Lake. Silverwood Lake SRA, which attracted roughly 676,000 visitors in 1991, is located in southwestern San Bernardino County (Jones and Stokes Associates 1994). Recreation facilities at the 976-acre Silverwood Lake are operated by DPR, and consist of a boat ramp, car-top boat ramp, swimming beaches, picnic areas, and campgrounds. Boating, water-skiing, fishing, swimming, camping, picnicking, bicycling, and hiking are popular activities at the recreation area. The Pacific Crest Trail passes along the northern and western edges of Silverwood Lake, accommodating large numbers of hikers.

Lake Perris. Lake Perris is in northwestern Riverside County, southwest of the city of Moreno Valley. Facilities at Lake Perris drew over 1.2 million visitors during 1991 (Jones and Stokes Associates 1994). Recreation facilities operated by DPR at the 2,318-acre Lake Perris SRA include three boat ramps, a marina, a water slide, two swimming beaches, hiking, biking and equestrian trails, and picnic and camping areas. The primary activities at Lake Perris are boating, water skiing, fishing, swimming, camping, picnicking, horseback riding, bicycling, hiking, hunting, and rock climbing. The Alessandro Island day use area, accessible only by boat, has a picnic area and trails.

13.2.4 *Applicable Plans And Policies*

Portions of the project area fall under the jurisdiction of a variety of local plans, including the *East County Area Plan* portion of the *Alameda County General Plan*, the *Contra Costa County General Plan*, and the *San Joaquin County General Plan*. Relevant recreation goals and policies from each of these documents are outlined below.

Alameda County. The East County Area Plan portion of the Alameda County General Plan addresses recreational uses in Alameda County near the proposed project facilities. The following relevant goal is found in that document: to ensure the development of plentiful and well-designed local and regional parks throughout the planning area.

Contra Costa County. Portions of the project area west of Old River fall within the jurisdiction of Contra Costa County. The *Contra Costa County General Plan* contains goals and policies related to recreation facilities within the county. The pertinent goals applicable to the project area are as follows: 1) to coordinate land use with circulation, development of other infrastructure facilities, and protection of agriculture and open space, and to allow growth and the maintenance of the County's quality of life. In such an environment all residential, commercial, industrial, recreational and agricultural activities may take place in safety, harmony, and to mutual advantage; 2) to preserve and protect the ecological, scenic and cultural/historic, and recreational resource lands of the County; to develop a sufficient amount of conveniently located, properly designed park and recreational facilities to serve the needs of all residents; and 3) to promote active and passive recreational enjoyment of the County's physical amenities for the continued health, safety and welfare of the citizens of the County. Several specific policies support these goals.

San Joaquin County. The area east of Old River is subject to the *San Joaquin County General Plan*. The Public Facilities Element of the *San Joaquin County General Plan* contains the following relevant recreation objectives: 1) to protect the diverse resources upon which recreation is based, such as waterways, marsh lands, wildlife habitats, unique land and scenic features, and historical and cultural sites; 2) to ensure the preservation of the Delta and the opportunity for the public to learn about and enjoy this unique recreation resource; and 3) to promote the recreational potential of San Joaquin County. Several specific policies support these goals.

13.3 *Environmental Impacts/Consequences*

13.3.1 *Methods Of Analysis*

A variety of methods and information sources were used to determine recreation impacts, including recreation surveys, boater surveys, and maps. Quantitative recreation surveys were conducted by DWR from 1991 to 1993 in order to evaluate the types of recreation found in the south Delta as well as boaters' impressions of the existing temporary barriers and portage facilities. The quantitative survey included the tabulation of all types of recreational activities, boat sizes, and recreationist responses to existing portage facilities on typical weekdays,

weekends, and holidays. ENTRIX personnel conducted qualitative recreation surveys in 1994, to determine the perceived effects of the proposed barriers. To account for opinions of recreationists throughout the south Delta, eight major recreation facilities were surveyed: Del's Boat Harbor, the Lazy M Marina, Tracy Oasis Marina, Union Point Resort, Discovery Bay Yacht Club, Cruiser Haven, Dos Reis County Park and Mossdale Marina. The results of these surveys are summarized within the context of this analysis.

In this analysis, the elements of the proposed project are compared to the applicable goals and policies found in relevant local planning documents. The evaluation does not attempt to address the consistency with individual goals and policies, but rather evaluates the proposed project's support of the general intent of those planning documents, and determines whether any features of the project would preclude a goal from being met.

13.3.2 Significance Criteria

In accordance with the CEQA Guidelines and professional standards, impacts are considered significant if implementation of the alternatives would: conflict with established recreational uses of the area; or result in a substantial need for new, altered or expanded recreational facilities. In addition, an impact is considered significant if implementation of the proposed alternatives would not support existing recreation goals and policies of local planning documents.

On a State and local level, the Delta Protection Act of 1992 (Act), incorporated into Section 21080.22 and Division 19.5 of the California Public Resources Code, is intended to facilitate the preservation and protection of Delta resources for the use and enjoyment of current and future generations. In support of that purpose, the Act includes a series of findings and declarations pertaining to the quality of the Delta environment. These findings emphasize the national, state and local importance of protecting the Delta's resources, including recreational resources, and indicate that protection of these resources will best be achieved through implementation of land use planning and management by local governments, in compliance with a comprehensive, long-term resource management plan under the Act.

At the federal level, the Council on Environmental Quality (CEQ) NEPA Regulations guide the preparation of environmental impact statements. In accordance with the CEQ NEPA Regulations, determinations of significance in this impact analysis take the following considerations into account: direct effects of the proposed action and alternatives; indirect effects of the proposed action and alternatives; and possible conflicts between the proposed action and the objectives of federal, regional, State, and local land use plans, policies and controls for the area concerned.

In addition, the federal 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material were considered in the evaluation of water-related recreation impacts. Under the 404(b)(1) Guidelines, dredged or fill material discharges into aquatic environments are considered potentially detrimental to water-related recreational resources if they: impair or destroy the resources which support recreation activities; or adversely modify or destroy water use for recreation by changing turbidity, suspended particulates, temperature, dissolved oxygen,

dissolved materials, toxic materials, pathogenic organisms, quality of habitat, or the aesthetic qualities of sight, taste, odor and color.

13.3.3 ISDP Project-Related Impacts

The review of the potential impacts of ISDP upon recreation concluded that the following were potential concerns. The potential for conflict with established recreational uses of the project area are primarily associated with construction and operation of the proposed water management facilities. In general, the results of the barriers on land-based recreational uses would be limited to the immediate structure footprint, while effects on recreational activities in the waterways may be more widespread.

The second potential concern involves conflict with applicable plans and policies regarding recreation in the project area. The local recreation goals, objectives and policies applicable to the proposed alternatives focus primarily on the preservation and protection of Delta recreational resources. Alameda County's *East County Area Plan* contains only one relevant goal, related to the development of recreation facilities. However, both the Contra Costa and San Joaquin County general plans emphasize the preservation and protection of recreational resources, and the provision of adequate public access to those resources. In addition, both counties have policies addressing the protection of water-related recreational resources. Finally, Contra Costa and San Joaquin counties emphasize the protection of the Delta's recreational value for its statewide and international importance, respectively.

The third potential concern involves the potential project-related effects upon recreational use of SWP facilities. Reservoir recreation benefits generally decrease as water levels recede (DWR 1993e). Lower water levels reduce water surface areas, decrease boat ramp accessibility, and increase the distances between recreation facilities such as swimming beaches or picnic grounds and shorelines (DWR 1993e). Occasionally, decreased recreation benefits at drawn-down reservoirs may be offset to some extent by increased stream recreation benefits (DWR 1993e). The duration and timing of low water elevations are of particular concern for SWP reservoir recreation, as many water-related recreational activities are seasonal.

Each of these potential concerns is addressed in the following.

- *Clifton Court Forebay Northern Intake Site*

Conflict with Established Uses. The area near the proposed northern intake site is noted for its catfish fishing (Schell 1992), and is a preferred water skiing location for many recreationists. In addition, waterfowl hunting, picnicking, and bird/wildlife watching are popular in nearby areas (DWR 1990a). The California Department of Fish and Game reports that bird watching is the fastest-growing recreational activity nationwide (DWR 1993e). Nearby Eucalyptus Island supports a heron rookery, which draws many birdwatchers. All intake construction would occur within the confines of the Clifton Court Forebay levees until the final levee breaching upon completion of the intake structure. Consequently, neither construction activities nor operation of the northern intake would disrupt nearby boating or water skiing. However, the noise and truck

traffic associated with the facility's three-year construction period could have detrimental effects on bird and wildlife viewing. This is considered to be a significant adverse impact for the duration of the construction period.

Conflict with Plans and Policies. The County of Contra Costa's recreation-oriented goals and policies generally encourage recreational development that complements the natural features of the area, and serves the needs of all the County residents. The construction and operation of the proposed intake facility would not conflict with these goals and policies. This is a less-than-significant adverse impact.

- *Old River Dredging Site*

Conflict with Established Uses. The proposed Old River dredging area includes many of the access routes to Italian Slough, on which the Lazy M Marina operates. This marina is a popular launching point in the Delta, and surveys reveal that decreased access to Italian Slough would likely lead boaters to launch elsewhere in the Delta. Dredging activities are expected to occur at intervals over two years. Any obstruction of these channels during the three-year dredging period could temporarily prevent boaters from using the Lazy M Marina at the southern end of Italian Slough.

The dredging of Old River would be accomplished using equipment typically encountered in the Delta by small craft, and which allows the continuous safe passage of small craft during the dredging. Accordingly, this component of ISDP is not expected to restrict access to boaters wishing to navigate Old River, or to enter Italian Slough and the Lazy M Marina. This is a less-than-significant adverse impact.

The Twitchell Island alternative dredge disposal site would generate considerable tow boat/barge traffic at times during the dredge removal effort. The barges must be towed 25 miles between Old River and Twitchell Island. This could create some problems for boaters in the area, although generally they would be able to travel around the barges. Dredging operations would also be scheduled during weekdays when boating traffic is much lighter.

Conflict with Plans and Policies. Dredging of Old River would occur in two counties. The Contra Costa/San Joaquin County line runs north-south down the middle of the dredging area. The County of Contra Costa's recreation-oriented goals and policies generally encourage recreational development that complements the natural features of the area, and serves the needs of all County residents. The County of San Joaquin's recreation-related goals and policies generally encourage the protection of the natural resources the area's recreational uses, including the Delta waterways. The goals and policies also encourage adequate public access to, and the navigability of the waterways. As dredging is not expected to obstruct the river or hinder the area's recreational value, this is considered a less-than-significant adverse impact.

- *Old River Fish Control Structure Site*

Conflict with Established Uses. The area around the proposed Old River fish control structure site currently supports several marinas and a substantial number of boaters; additional facilities are planned nearby within the proposed Gold Rush City project. Placement of a barrier in this location would restrict boat travel along Old River. The proposed portage facilities, consisting of a jib crane and sling to transport boats over the barrier, could deter some boaters from passing through the area during periods of barrier operation, as surveys indicate that some boaters may be reluctant to use the crane. Consequently, although existing facilities would still draw patrons to participate in camping, picnicking, biking, hiking, bank fishing and bird watching, introduction of this structure could interfere with boating activities. This is considered a significant adverse impact.

Conflict with Plans and Policies. The County of San Joaquin's recreation-oriented goals and policies generally encourage the protection of the natural resources that support the area's recreational uses, including the Delta waterways. The goals and policies also encourage adequate public access to, and the navigability of the waterways. The construction and operation of the proposed control structure would not be consistent with these goals and policies of the County of San Joaquin's General Plan. This is considered a significant adverse impact.

- *Middle River Flow Control Structure*

Conflict with Established Uses. DWR surveys show that the most frequent recreation activity at the Middle River site is fishing; however, this site receives less usage than many areas of the south Delta. The nearby Union Point Marina functions as a midday rest stop for boaters during a day on the water. Boaters generally access the marina from the north and west on Middle River, Victoria Canal or North Canal; few venture eastward on Middle River due to the shallow water and snags in the channel (Schell 1992). Neither construction nor operation of the proposed barrier is expected to affect recreational activity in the area. This is considered a less-than-significant adverse impact.

Conflict with Plans and Policies. The County of San Joaquin's recreation-oriented goals and policies generally encourage the protection of the natural resources that support the area's recreational uses, including the Delta waterways. The goals and policies also encourage adequate public access to, and the navigability of the waterways. In this location, there are natural constraints to public access and navigability. Accordingly, the construction and operation of the proposed control structure would not conflict with these goals and policies of the County of San Joaquin's General Plan. This is considered a less-than-significant adverse impact.

- *Grant Line Canal Flow Control Structure*

Conflict with Established Uses. Some of the best fishing on the Delta is located along Grant Line Canal, which is known for its catfish and "stripers" (Schell 1992). In addition, the area is heavily used for boating. The proposed barrier design at the western end of the canal incorporates a boat lock to assist boaters in crossing the barrier; however, the presence of the

structure could hinder travel on the waterway, and boaters launching outside the immediate area would be less likely to fish along Grant Line Canal. This is considered a significant adverse impact.

Conflict with Plans and Policies. The County of San Joaquin's recreation-oriented goals and policies generally encourage the protection of the natural resources that support the area's recreational uses, including the Delta waterways. The goals and policies also encourage adequate public access to, and the navigability of the waterways. The construction and operation of the proposed control structure would not be consistent with these goals and policies of the County of San Joaquin's General Plan. This is considered a significant adverse impact.

- *Old River Flow Control Structure Site*

Conflict with Established Uses. The Old River flow control structure site lies in a preferred fishing and boating area, near several existing marinas and directly adjacent to one proposed marina. The *San Joaquin County General Plan* designates the southern bank of Old River adjacent to the barrier site for a 70-acre regional park and a 40-acre marina. These planned uses are expected to draw additional recreationists to this popular area. Although the barrier would include a boat lock to facilitate river travel, the flow control structure would impede boat travel. This is considered a significant adverse impact.

Conflict with Plans and Policies. The County of San Joaquin's recreation-oriented goals and policies generally encourage the protection of the natural resources that support the area's recreational uses, including the Delta waterways. The goals and policies also encourage adequate public access to, and the navigability of the waterways. The construction and operation of the proposed control structure would not be consistent with these goals and policies of the County of San Joaquin's General Plan. This is considered a significant adverse impact.

- *Increase Diversions Into Clifton Court*

This component of ISDP would have an effect upon the operation of the SWP, including the operation of the SWP reservoirs and waterways, which are important for recreation. The effects of ISDP upon recreation in the reservoirs and waterways is discussed in the following.

SWP Reservoirs. The ISDP would increase exports from the south Delta to SWP reservoirs, and would alter the duration and timing of water level fluctuations at SWP facilities. These changes could cause shifts in the timing of high and low water levels, affecting the use of recreational facilities. Water surface elevation is expected to rise during all months of the year at San Luis Reservoir and remain static at O'Neill Forebay; the other reservoirs would experience slight decreases. Lake Oroville would have the greatest change. Projected lower water levels at Lake Oroville could precipitate the closure of one more boat launching facility than usual under the following circumstances: in the months of October, November and January through March of critically dry years; during May, July and August of dry years; in September of below-normal years; and in December of wet years. Pyramid Lake could experience decreases of up to two feet during July of a below-normal water year. Castaic Lake, Silverwood Lake, and Lake Perris

would all experience water surface elevation drops of less than one foot during dry or below-normal years. None of these changes are substantial enough to preclude boating or other recreational activities at any of the reservoirs; consequently, this is considered a less-than-significant adverse impact.

SWP Waterways. Implementation of the ISDP would affect flows on the Lower Feather River and the Lower Sacramento River, and the California Aqueduct. All of these waterways would experience both increased and decreased flows at various times of the year. Maximum decreases on these watercourses would occur during the month of September under the following conditions: on the lower Sacramento River, a decrease of 9.4 percent during below-normal years; on the Feather River below Oroville Dam, a maximum decrease of 36.4 percent in above-normal years; and on the California Aqueduct, a decrease of 11.7 percent in wet years. Water-contact activities are affected by air and water temperature, and fishing activity occurs in response to the presence of fish in the river (Jones and Stokes Associates 1994). In addition, lower flows occasionally affect boating, as navigation hazards are exposed. However, instream flows are closely monitored and controlled on both the Feather and Sacramento rivers, to meet environmental water needs. Consequently, recreation quality on the Feather and Sacramento rivers is unlikely to be degraded by implementation of the ISDP. As fishing is the only water-dependent recreation allowed on the California Aqueduct, and fluctuations in canal flow level do not affect fishing quality (Jones and Stokes Associates 1994), the ISDP would not affect recreational uses along the aqueduct. This is considered a less-than-significant adverse impact.

13.4 Mitigation Measures

13.4.1 Clifton Court Forebay Northern Intake

Conflict with Established Uses. The impact evaluation determined that the noise and truck traffic associated with the construction of the facility could have a significant adverse impact upon bird and wildlife viewing during the three-year construction period. This potential impact can be reduced to a level of insignificance by avoiding the approach that passes adjacent to Eucalyptus Island. As such, the construction-related traffic should be directed to approach and leave the construction site via the access road on the southern perimeter of Clifton Court Forebay. By keeping construction traffic as far from Eucalyptus Island as possible, DWR can minimize any temporary interference with existing bird watching opportunities in the area.

13.4.2 Old River Fish Control Structure

The impact evaluation concluded that the proposed Old River fish control structure would deter some boaters from passing through the area, in spite of the availability of the proposed portage facilities. It was also concluded that this would conflict with the County of San Joaquin's recreation-oriented goals and policies that encourage adequate public access to, and the navigability of the waterways. These significant adverse impacts can be reduced to less-than-significant levels through the following: 1) DWR should avoid construction work on the Old River fish control structure during major summer holiday periods; 2) during construction of the barrier, DWR should post warning signs and buoys in the channels of the San Joaquin River and

Old River in the vicinity of construction equipment and operations; 3) DWR shall educate boaters about procedures for use of the jib crane portage facility through a variety of methods, including, but not limited to: posting of clearly readable instructional signs on the banks and waterway at all approaches to the barrier site; distribution of educational flyers containing maps, operation schedules, portage procedures and alternate routes at marinas and public launching facilities; and classes at local marinas on the use of the portage device; and 4) adequate warning about activities and equipment should be provided to minimize disruption of boating movement during the barrier construction process. Education in the use of the jib crane should make boaters less hesitant to use the facilities, thereby reducing travel restrictions during periods of barrier operation.

13.4.3 Grant Line Canal And Old River Flow Control Structures

The impact evaluation concluded that the proposed Grant Line Canal and Old River flow control structures would deter some boaters from passing through the area, in spite of the availability of the proposed lock facilities. It was also concluded that this would conflict with the County of San Joaquin's recreation-oriented goals and policies that encourage adequate public access to, and the navigability of the waterways. These significant adverse impacts can be reduced to less-than-significant levels by implementing a number of mitigation measures, as follows.

DWR should: 1) avoid construction work on the Grant Line Canal barrier during major summer holiday periods; 2) DWR should post warning signs and buoys within Grant Line Canal near all construction equipment and operations; 3) provide adequate warning about activities and equipment to minimize disruption of boating movement during the barrier construction process; and 4) educate boaters about procedures for use of the lock through a variety of methods, including, but not limited to: posting of clearly readable instructional signs on the banks and waterway at all approaches to the barrier site; distribution of educational flyers containing maps, operation schedules, portage procedures and alternate routes at marinas and public launching facilities; and classes at local marinas on the use of the lock facility, setting up an information telephone hotline and a homepage on the internet to provide updates on the construction activities and operation of the barriers. Education in the use of the boat lock would make boaters less hesitant to use the facilities, thereby reducing travel restrictions during periods of barrier operation.

In addition to the above mitigation, DWR has also evaluated the possibility of relocating the Grant Line Canal barrier to the eastern end of the canal. The mitigated site is approximately 5.5 miles east of the current location, or 500 feet east of the Tracy Boulevard bridge. The relocation to this site would reduce terrestrial biological impacts and could help reduce the impacts on recreation as well. DWR's boating survey indicated that boating traffic is heavier at the western end of the canal than the eastern end. However, it should be noted that data on the eastern end of the canal was only collected in one year, 1995. Boat surveys are being conducted in 1996. Data from the 1996 Boat Survey will be included in the Final EIR/EIS.

13.5 Comparative Evaluation Of The Alternatives

13.5.1 Enlargement Of Clifton Court Forebay, Construction Of Two Intake Structures, Increased Export Capability, And Construction Of Permanent Barriers

This alternative would include several of the components that are associated with the proposed project, ISDP. These are the construction and operation of the Old River fish control structure, Middle River tide barrier, Grant Line Canal barrier, and Old River flow control structure. The intake proposed for ISDP would not be constructed. Instead, this alternative would include an enlargement of the Clifton Court Forebay and the construction of two intake facilities on the enlarged forebay.

Accordingly, this alternative would include all of the impacts associated with ISDP, except those created by the construction and operation of the northern intake facility. In addition, this alternative would include impacts associated with the expanded forebay and the construction of two new intake facilities, as described in the following.

Enlarged Clifton Court Forebay. The proposed Clifton Court Forebay enlargement would increase the forebay's surface area by approximately 2,900 acres through the inundation of agricultural lands. It is unclear how this expansion would affect boating along Italian Slough from the Lazy M Marina, but at the least, vehicular access to the marina may be permanently eliminated or severely restricted. Alternatively, the marina itself could be displaced by the enlarged forebay. The loss of access to existing recreational facilities is considered an unavoidable significant adverse impact.

North Victoria Canal/Middle River Intake Site and North Victoria Canal/Old River Intake Site. The proposed intakes would replace existing levee segments on the northern edge of Victoria Island in a largely agricultural area. Although North Victoria Canal is a popular spot for boating and water skiing, no developed recreational facilities exist in the vicinity. As the intakes would be built within the confines of the Victoria Island levee and would not extend into the waterway, neither construction activities nor operation of the intakes is likely to disrupt nearby boating or water skiing. This is considered a less-than-significant adverse impact.

Conflicts with Plans and Policies. This alternative would conflict with the general intent of local plans to preserve and protect Delta recreational resources. In particular, the proposed expansion of Clifton Court Forebay could eliminate at least one marina and restrict access to a popular fishing area, thereby reducing public access to existing resources. This is considered an unavoidable significant adverse impact.

Recreational Use of SWP Facilities. Under this alternative, the water surface elevation of SWP reservoirs could vary slightly from historic conditions, as could flows in the Feather River, Sacramento River and California Aqueduct. However, as described above, such changes are unlikely to be detrimental to recreation at SWP reservoirs and waterways. This is considered a less-than-significant adverse impact.

13.5.2 Reduction Of CVP/SWP Exports And Management Or Reduction Of Demand For SWP Water

This is a non-structural alternative which would differ substantially from ISDP in not including the construction and operation of new facilities in the Delta, and not including the dredging of Old River. None of the environmental effects of ISDP would occur if this alternative were implemented.

Conflict with Established Uses. The implementation of this alternative would involve operational changes such as reducing CVP and SWP pumping in the Delta and water management measures in the SWP service areas. These actions would result in slightly higher Delta water levels, which would not conflict with any established recreational uses in the south Delta. Accordingly, the significant adverse impacts associated with ISDP would be avoided with the implementation of this alternative.

Conflict with Plans and Policies. The implementation of this alternative would involve operational changes in the Delta and water management measures in the SWP service areas. Increased south Delta water levels would be the only physical changes resulting from this alternative; consequently, no conflicts are anticipated to arise with applicable recreation plans or policies. Accordingly, the significant adverse impacts associated with ISDP would be avoided with the implementation of this alternative.

Recreational Use of SWP Facilities. This alternative would result in little change to flows on the Feather and Sacramento rivers, diminished flows on the California Aqueduct, and reduced water supplies to SWP reservoirs and changes in the water level fluctuation patterns at those reservoirs. As such fluctuations are unlikely to have substantial negative effects on recreation. Accordingly, the significant adverse impacts associated with ISDP would be avoided with the implementation of this alternative.

13.5.3 Modification Of CVP/SWP Exports, Consolidation Of Agricultural Diversions, Extensions Of Existing Agricultural Diversions, And Increased Pumping At Banks Pumping Plant Up To 10,300 cfs.

This alternative would differ substantially from ISDP. The first three components of this alternative include elements for modifying CVP/SWP exports, performing channel dredging, and changes to irrigation diversions by consolidation, lowering inverts and screening. These components would be carried out instead of constructing and operating the fish and flow control structures proposed with ISDP. The impacts associated with these components are discussed below.

Conflict with Established Uses. This alternative incorporates operational changes that would slightly elevate south Delta water levels, but would not be expected to affect any established recreational uses. The consolidated agricultural diversions and changes to existing diversions, along with their associated construction and dredging would not be likely to have significant impacts on recreation in the area. Most of the diversions are located in areas supporting

primarily agricultural uses; nearby recreational resources consist mainly of those marinas previously noted for the ISDP analysis. Most of these facilities are located away from the proposed changes or on the water side of levees. The dredging operations would be the most disruptive activity for recreational boating, but this could be scheduled to avoid weekends and holidays when boating use is greatest. This is considered a less-than-significant adverse impact.

Conflict with Plans and Policies. Some elements of this alternative involve no physical changes to the south Delta environment beyond increased water levels, and therefore would not conflict with recreation plans or policies. Localized channel dredging is not expected to affect existing recreational resources, nor, as noted above, is the consolidation of agricultural diversions. This is considered a less-than-significant adverse impact.

Recreational Use of SWP Facilities. This alternative would entail water management actions that would likely have similar effects on SWP reservoirs and waterways to those anticipated for the export reduction and demand management alternative described above. This is considered a less-than-significant adverse impact.

13.5.4 ISDP Project With An Additional Clifton Court Forebay Intake At Italian Slough

This alternative would include all of the facilities and environmental effects associated with ISDP, plus the effects of the construction and operation of a second intake facility at Italian Slough, which is discussed in the following.

Conflict with Established Uses. The proposed Italian Slough intake would replace an existing segment of the Clifton Court Forebay levee, located south of Italian Slough and in close proximity to the Lazy M Marina. Nearby levee areas along Clifton Court Forebay are popular fishing locations. As the intake would be built within the confines of the Italian Slough levee and would not extend into the waterway, neither construction activities nor operation of the intake is likely to disrupt nearby boating activities. Construction of the intake could block vehicular access to the Clifton Court levee, preventing recreationists from reaching an existing fishing access. However, given the extensive fishing sites along nearby channels of the Delta, and rivers this is considered a less-than-significant adverse impact.

Conflict with Plans and Policies. Apart from the addition of the Italian Slough intake, this alternative would involve the actions associated with the ISDP. Construction of that water management facility would not conflict with any plans or policies related to recreational resources. Consequently, the compatibility of this alternative with applicable plans and policies would be comparable to that identified above for the ISDP. This is considered a significant adverse impact.

Recreational Use of SWP Facilities. The effects of this alternative on SWP reservoir and waterway recreation would be comparable to those associated with ISDP implementation. This is considered a less-than-significant adverse impact.

13.5.5 ISDP Without The Northern Intake, And With An Expanded Existing Intake

This alternative would differ from ISDP in not including the construction of a new intake at the northern extent of Clifton Court Forebay. Instead, the existing Clifton Court Forebay intake would be expanded and West Canal would be widened. The effects of expanding the existing intake and widening West Canal are discussed in the following.

Conflict with Established Uses. The expanded Clifton Court intake would replace an existing Clifton Court Forebay levee segment with additional intake facilities alongside the current intake. Existing recreation uses in the site vicinity consist mostly of boating, fishing and water skiing. As these activities are concentrated on nearby waterways and levees, rather than the area immediately adjacent to the present structure, intake expansion is unlikely to affect them. Consequently, this is considered a less-than-significant adverse impact.

Coney Island borders the eastern bank of West Canal, a popular water skiing area. Expansion of West Canal approximately 300 feet eastward into Coney Island is not expected to negatively affect recreational use of the waterway, and could make a larger area useable for boating and water skiing. This is considered a less-than-significant adverse impact.

Conflict with Plans and Policies. As proposed under this alternative, expansion of the existing Clifton Court Forebay intake and the enlargement of West Canal would be compatible with applicable recreation plans and policies.

Recreational Use of SWP Facilities. This alternative would likely affect SWP reservoir and waterway recreation similarly to the ISDP. This is considered a less-than-significant adverse impact.

13.5.6 No Action (Maintain Existing Conditions)

This alternative would involve the maintenance of existing conditions in the south Delta. As no physical changes would occur, this alternative would not conflict with current recreational uses in the project area, it would not conflict with any applicable recreational resource plans or policies, and it would not affect recreational use of SWP reservoirs.

13.5.7 No Action (Maintain Conditions As They Would Exist In The Future)

This alternative would involve the maintenance of existing conditions in the south Delta. As no physical changes would occur, this alternative would not conflict with current recreational uses in the project area, it would not conflict with any applicable recreational resource plans or policies, and it would not affect recreational use of SWP reservoirs.